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To Serve Authentically: The Challenge and Gifts of a Postmodern Generation

Speaker: **Sandy Shugart**, *President, Valencia College*

Overview

Institutions of all types are struggling. They have become large, bureaucratic, slow, rules-based, risk-averse, and impersonal. At the same time, students today—most of whom are in the postmodern generation—have a different outlook. They see randomness, have their own truth and narratives, are skeptical, and don't believe in institutions.

To sustain institutions of higher education, leaders need to treat students as people, behave as people, and break the rules to create a personal, engaged culture where humans serve other humans. Technology can help in improving the student experience.

Context

With songs and stories, Sandy Shugart described the challenges institutions face, the unique characteristics of the postmoderns, and what institutions should be thinking about.

Key Takeaways

- **Institutions face major problems.**

  For more than a century, most forms of human service have been given over to institutions. Health care, higher education, and social safety nets are all served by institutions. Institutions have enabled society to extend services broadly to people of modest means. But institutions today face huge crises which are a function of:

  - **Becoming too large**. Institutions have become so large that they depersonalize everything.
  - **Dependence on processes and technologies**. To achieve scale, institutions must develop processes and employ technologies. But the result is that those being served feel like a number.
  - **Different attitudes among those being served**. This generation of students, born after 1980, are fundamentally different. It is not just that they are tech savvy and communicate via social media. And it is not just the various superficial trends identified through survey research. Current students think and behave very differently. (More below.)

- **The postmodern generation is fundamentally different.**

  Borrowing from architecture, people can be thought of as modern or postmodern. Many of today's students are postmodern, and are distinguished from previous generations in the following ways:

  - **Cause and effect vs. randomness**. Those from the modern world believe in the notion of cause and effect. The idea is that any problem can be solved by breaking it into small pieces, figuring out the root causes, and fixing these causes.

    The postmodern generation has a different outlook: randomness. There are no underlying causes; everything is merely random. Members of this generation don't see a coupling between effects and underlying causes. Things don't sequentially or naturally lead one to another; they just happen randomly.

  - **Universal truth vs. relative truth**. Those with a modern outlook believe in universal truths. Any truth is independent of the person who claims it, because the truth is proven through credible evidence.

    But those with a postmodern outlook view truth as relative; it is constructed by and for each person. One person has their own truth; another person has another truth. Any effort of one person to impose their truth on another is seen as intolerant. People aren't interested in evidence, as they want to shape their own truth, based on their own experience and perspective. Those with this outlook like to say, "Hey, it's my movie. I'll write it any way I like."

    An example was shared from a poetry class where a student was asked to interpret an E.E. Cummings poem. The student offered his own interpretation, saying essentially, "This is what it means TO ME." The idea of trying to understand the author's intent held no interest to the student, who only cared about his truth.

    > *"These are two cultures passing in the night. The notion of a modern interpretation of a poem is to discern the author's intention . . . in postmodern criticism the idea is that there is no one meaning to a poem. It has a different meaning every time it's read."*
    > — Sandy Shugart

  - **Overall control vs. personal narrative**. Those with a modern perspective try to discern reality, figure out the truth, and bring it under control. This might mean controlling nature by creating systems of control and management. In the postmodern perspective, everything is relative and the interest is in the personal narrative. And the narrative can be reinvented and restarted.

- **Competition vs. affiliation**. The modern world is about survival of the fittest and competition is the source of innovation. But many in the postmodern generation are not interested in competition. They are more interested in affiliation. The question isn't, "Who did I beat?" It is, "Who did I join with and who is my tribe?" In previous decades there was a dominant high school culture; now there is fragmentation and multiple sub-cultures.
- **Intentional progress vs. stuff happens.** Moderns believe in progress every day. The idea is to always get better. Moderns are building things, heading some-place. The postmodern outlook is "stuff happens." This generation has seen numerous humanitarian, political, and economic disasters. As a result, there is little optimism and high levels of skepticism.
- **Believe in institutions vs. don't believe**. Moderns believe in institutions, but today's students don't. Postmoderns believe that institutions see them only as a number, a magnetic strip on a card.

  Consider a professor's perspective versus that of a student. The professor thinks of the sacrifices he made. He studied hard, went to Ivy League institutions, wrote dissertations, published books, and is an authority. He believes he deserves respect, and that students should listen and learn. Meanwhile, a student in the same classroom sees the professor and says, "I wonder what his scam is?"

  This cynicism results from a generation steeped in postmodern consumer capitalistic advertising, where institutions are trying to sell to them. This has even been the case in higher education. After the baby boom there was a decline in the number of high school students and fear that colleges were in trouble; some thought colleges would have to close. So colleges turned to "enrollment management," adopting the techniques of corporate marketers.

Modern	Postmodern
Cause & Effect	Randomness
Universal truth	Truth is relative, personal
Control and management	Individual narrative.
Competition	Affiliation
Intentional progress	Stuff happens
Believe in institutions	Don't believe in institutions

- **In light of the perspectives of the postmoderns, institutions need to humanize their experience.**

  For institutions to survive amid the skepticism of the post-modern generation, institutions must figure out how to operate at scale while treating people as human beings.

> *"How at scale do we treat unique human beings as persons and not numbers? That's all we have to do."*
> — Sandy Shugart

There is only one definition of authentic human service, and that is to render a unique response to the unique human being in front of you. Three proposals:

- **Treat every student as a person**. Technology provides the power to do this. The same tools used to influence purchases can be used to treat people more personally. One institution found that during 30-minute advisor interactions with students advisors averaged speaking with a student for 8 minutes, while scrolling through screens for 22. Think of the experience this created for students. And, these interactions often take place across counters where students can't see the screen and spend their time looking at the back of a computer. Students don't need a printout of their transcript; they need a conversation.
- **Be a person yourself**. We are used to being an institution. Letters are impersonal and are sent from departments, not from people. These letters often aren't signed by people and don't have personal contract information where students can follow up. In addition to treating students as people, behave as a person yourself.
- **Break the rules**. Almost every time a student has had an extraordinary service experience, it is because someone broke a rule—usually tiny rules that don't matter. The job of presidents and other leaders is not to make people follow rules; it is to create an organizational climate where good people do the right thing for the right reasons.

> *"It is really important in organizational life to know when and how to break the rules."*
> — Sandy Shugart

Often leaders and front-line people know the right thing to do, but prefer to limit their losses, so they follow the rules. This is institutional immorality. Leaders need to do the right thing and empower those on the front lines to do the right thing. Doing so removes employee resentment toward students and gives employees hope and meaning.

> *"This generation we serve needs to believe it's possible for human beings to flourish and thrive in the midst of institutions and help others flourish and thrive, or our institutions will be lost."*
> — Sandy Shugart

Credit Hours, Credentials, and Competencies! Are We Creating New Currencies for Communicating the College Curriculum to our Colleagues in Commerce and Academe?

Moderator: **Mike Reilly**, *Executive Director, AACRAO*
Panelists: **Tom Black**, *Associate Vice Provost for Student Affairs and University Registrar, Stanford University*
Matthew Pittinsky, *CEO, Parchment*

Overview

Traditional transcripts are no longer adequate in providing a rich record of a student's capabilities. They don't fully capture or reflect all learning that takes place and don't present a complete picture of a student's capabilities. Transcripts fail to aggregate information about the skills, knowledge, competencies, and experiences gained from multiple educational institutions, online courses, certifications, and life.

Seeing the need for new ways of capturing academic and non-academic information—for students and employers—institutions are innovating by developing various electronic transcripts and e-portfolios. These new technologies enable better capturing and presenting the depth and breadth of student learning. This is likely to evolve to enable students and graduates to have a lifetime record, which they can continuously add to, indicating stackable credentials.

Context

The moderator and panelists discussed issues with traditional transcripts, described changes needed and innovations taking place, and examined the role and evolution of competency-based education.

Key Takeaways

- **Competency-based education and recording students' experiences are major trends.**

  In introducing this session, Mike Reilly remarked that in speaking with AACRAO members across the country, two topics he hears frequently about are reexamining the transcript and competency-based education.

- **Traditional transcripts have numerous limitations.**

  Mike Reilly argued that the college transcript has served higher education well for many years, but a shift has taken place in the perception of transcripts. The speakers identified several issues with transcripts. These include:

  - **Whom transcripts serve**. Tom Black argued that transcripts mainly serve academic institutions, and weren't meant to serve anyone else. A transcript reflects the curriculum, and provides information to other academic institutions. This is "inside baseball" and other stakeholders are not well served.

    But with increased focus on educating and equipping students for jobs, transcripts don't currently make clear to potential employers the knowledge, skills, and capabilities of students; they don't effectively serve an employer audience. Transcripts merely show the courses completed by a student and the grades achieved. Black sees transcripts as an "insufficient document" in helping students enter the job market. For example, transcripts are organized chronologically, as opposed to by subject matter. Yet an employer hiring a computer science graduate is less interested in the courses taken each semester and is more interested in seeing clustered together all of a student's computer science courses.

    > *"We should be looking at the documentation that is necessary for helping students become more successful. When you do that, you would say, 'Who is the audience?'"*
    > — Thomas Black

  - **What information transcripts provide**. A transcript provides a student's grade in a particular course, but doesn't indicate if a student has acquired skills or knowledge. Matthew Pittinsky teaches a sociology course where he expects students to write and speak well, think analytically, and be comfortable with numbers. But transcripts just reflect a student's grade in sociology, not their writing, speaking, thinking, or analytical capabilities. Reilly also noted that transcripts don't capture the full range of student experiences, such as leadership, community service, research, and other scholarly pursuits. Many of these activities are already being supervised but are not being recorded. Black remarked, "Very important learning is going on and I think it should be added to the record."

    Pittinsky sees students wanting not just a record of the courses they took, but a document reflecting their full educational experience.

> *"Students are looking not simply for their credential to be an inventory of the courses they took, and their achievement in these courses, but a currency that helps them access opportunities to get into graduate school, to get a professional license, to get a job."*
> — Matthew Pittinsky

Also, while the nature of education has changed and is continuing to change, transcripts haven't kept pace. Students move between institutions, take courses online, have work experiences, and desire credit for prior learning. Traditional transcripts don't fully aggregate or reflect this collection of experiences.

- **How information is provided**. A century ago, transcripts were more expressive and descriptive. But that has been eliminated, as there is now a good bit of consistency among institutions in the elements and format of transcripts. However, in some ways this standardization may have constrained innovation. With technology, it is possible to once again make transcripts more descriptive. (But, innovations that move away from standardization could create a "Tower of Babel" environment.)

- **The current infrastructure and information systems**. Institutions may lack an infrastructure or IT system to store more descriptive information, with some institutions having systems that limit the types and the richness of information that can be entered.

- **Innovations are taking place in how students' experiences are captured and shared.**

Several innovations were described, which show the new types of ideas that are percolating.

- **University of California San Diego**. A new model has been adopted at UCSD with an electronic record having three parts: 1) An academic transcript, which is semi-traditional, but because it is digital, includes information such as course descriptions and syllabi; 2) A co-curricular transcript where the registrar's office will validate other experiences on campus; and 3) an e-portfolio which the student can create and populate. The speakers see this model as leveraging technology to meet the needs of multiple audiences.

- **Stanford**. Stanford has taken the transcript from a static printable document to an electronic, clickable repository of information. For example, an electronic version of a student's dissertation along with key artifacts, like honors papers or even multimedia, is placed into their repository, and all of a student's records are connected. An employer considering a student could ask the student to show their work—just as a person hiring a contractor to build a house would want to see examples. This clickable electronic repository makes this possible, and enables someone reviewing this information to go deeper and deeper.

  Stanford is also encouraging faculty to indicate explicit statements of learning for their courses, which are organized around eight "breadth requirements." By having this information in a database, a reviewer wouldn't just see the title of a course, but could see the learning that took place and see "clusters" of learning and skills.

> *"What this does for a student is enable them to articulate to whoever they are addressing how rich an experience has been."*
> — Tom Black

- **Parchment**. Matt Pittinsky showed how his organization is innovating by enabling credentials from multiple sources to be collected and stacked. This could include bringing together information such as ACT scores, community college documents, online courses, multiple transcripts, various credentials, and other information, all of which would be certified by an original issuer. Credential information could also be aggregated and presented as part of a "professional identity." (Black sees the need for individuals to have electronic portfolios they can continually narrate and curate as their career unfolds. Individuals can develop multiple personas for use with different audiences in different situations.)

> *"Leaving higher education to enter into this thing called 'life' is not so clear anymore . . . both degree and non-degree credentialing that postsecondary does is going to be much more fluid throughout our lives."*
> — Matt Pittinsky

- **Visual transcripts**. Pittinsky pointed out that transcripts have always been textual, but the capability exists for transcripts to show patterns and progress in a more visual way, analogous to infographics.

A general benefit of technology is that once different types of data are entered into a system there can be different outputs for different audiences.

While these innovations are generally seen as positive, they are not without concerns, challenges, and tradeoffs. For example, if universities innovate their transcripts to the point of creating a Tower of Babel, the historic uses of transcripts by "inside" users may no longer be met.

Also, as institutions aim to include non-academic content in transcripts, a challenge that must be addressed is creating a process to delegate or distribute out to staff and faculty approval of these non-academic experiences.

This is solvable, as institutions have an infrastructure and policies that can be extended out to university staff. However, getting faculty accustomed to thinking about and articulating competencies will be a change, which will take time.

A concern expressed by audience members was that a transcript would be a statement by a university of what a student supposedly learned, as opposed to a curated compilation by a student that conveyed their skills and knowledge. Having all information reflected in a transcript may decrease student experimentation and risk taking, if they believe that all results will become part of the permanent record. An option may be for students to work with career counselors to create a reflection of what they learned. This would be different from the institution stating what a student learned. As one audience member said, "It is kind of exciting, but also kind of scary."

Pittinsky believes that innovation won't happen overnight; it will take place incrementally over time by continuously moving the needle forward.

- **Several models are evolving from competency-based education and transcripts.**

Mike Reilly sees a great deal of misunderstanding about and significant differences in competency-based education. Models he sees include:

- **Direct assessment**. Northern Arizona and Southern New Hampshire are engaging in "direct assessment" where students pursue competencies outside of a course or term framework. They are studying learning materials—such as readings, lectures, and videos—and then taking assessments.

- **Faculty coming together**. While direct assessments may be receiving buzz, more common is for faculty to come together to define learning outcomes for students in their programs, within a course framework.

- **Hybrid**. There are organizations such as Western Governors University where students are pursuing learning outcomes, behind the scenes, and still mapping it to a course or credit framework, primarily because of Title IV consideration.

These new types of competency-based models are resulting in new types of competency-based transcripts. The competency-based transcript at Northern Arizona shows major competencies, generalized into topics. But, Northern Arizona is not producing this transcript in isolation; it is still creating a document that shows courses in a traditional framework.

Black indicated that the audience for competency-based information is not the universities; it should be the student. Institutions need to move away from a one-size-fits-all approach.

> *"I think we need to have multiple documents to record what is going on."*
> — Tom Black

- **Registrars are the right people to lead transcript changes.**

In response to a question about whether it is a natural extension for registrars to move into validating potentially non-academic work, several registrars in attendance indicated that they were not comfortable in being the department to do so.

Tom Black disagreed. He said that creating processes and systems is exactly what registrars are experts at. He sees registrars as having the knowledge and breadth to take this on, doesn't see anyone else with the appropriate knowledge and experience, and believes that registrars need to step up and take this on.

> *"You're absolutely the right people to do this at your institutions . . . I would encourage you to assert what you know and apply it in these circumstances."*
> — Tom Black

Student Persistence and Campus-Based Financial Aid: Policy, Data, and Technology and How They Come Together

Speaker: **Don Hossler**, *Director of the Center for Postsecondary Research & Professor of Educational Leadership and Policy Studies, Indiana University Bloomington*

Overview

In all areas of higher education, public policy plays a key role in shaping the landscape. Rankings of institutions, international assessments, foundations, and other stakeholders drive policies at the state and federal level. These policies and how they are measured in turn affect institutional actions related to retention, completion, transfers, financial aid, and more.

A common theme is that in the era of increased account-ability and measurement, institutions must have accurate, complete, and timely data. Data provides evidence, which enables institutional leaders to make more informed decisions in multiple areas, including enrollment, financial aid, and identifying at-risk students. Having complete and easily accessible data requires modern, sophisticated technology.

Context

Don Hossler discussed public and institutional policies, and described the role that technology and data play in undergirding all policies.

Key Takeaways

- **Today, data and technology provide the foundation for all policy discussions.**

  Discussions of the key issues today in higher education always touch on retention, completion, cost, transfer, financial aid, accountability, transparency, and student debt. All of these issues, and more, require a foundation of technology, information systems, and data.

> *"Everything I'm going to talk about would be impossible without the foundation that makes it possible to access and utilize information. In this day and age, that means technology."*
> — Don Hossler

- **Multiple factors are driving institutional and public policy issues in the United States.**

  We live in interesting times, with multiple institutional and public policy issues, and multiple entities driving these issues. Key drivers and entities driving them include:

  - *Changing demographics*. In the next 5–10 years, students are much more likely to be first-generation college students, to be low income, and to come from Latino households where English may not have been the first language. With these changing demographics, it is not clear how institutions will be able to sustain current levels of merit-based aid in the face of increased demand for need-based aid.
  - *State policies*. States play a key role in educational policies. States are deregulating higher education, while simultaneously building more accountability metrics.
  - *Federal policies*. There is now a three-year cohort default rate, which could require institutions to file plans for how they will change their default rate or lose their eligibility for federal financial aid. The federal government is also focusing on student debt and college completion, and is encouraging more students to attend community college. In addition, the federal government is creating a Postsecondary Institutional Rating System (PIRS). All of these policies rely on technology and data. For some, the lack of data will be a challenge.

> *"I think we're likely to end up with a federal rating system that is simple, maybe general-izable, but it won't be accurate, because the feds simply lack the data."*
> — Don Hossler

  - *Foundations*. Organizations such as the Lumina Foundation and the Gates Foundation are driving the policy agenda at the public level, which also affects policy at the institutional level.
  - *U.S. News & World Report*. Through its rankings, which everyone pays attention to, *U.S. News & World Report* is part of the story.
  - *OECD (Organization for Economic Cooperation and Development)*. During the past decade, OECD started releasing data showing the number of people receiving postsecondary education in many countries, particularly industrialized Western nations, as well as some Asian countries. The data showed that the United States was no longer number one in postsecondary achievement. However, some other countries include postsecondary certificates in their measures of higher education. This has increased the emphasis

at community colleges in the United States on better measuring and capturing data on the awarding of postsecondary certificates.

> *"Postsecondary certificates are where a lot of the action is right now. If the U.S. is going to catch up with the rest of the world, doing a better job of counting postsecondary certificates is absolutely crucial in becoming number one again."*
> — Don Hossler

- **Institutions are grappling with multiple policy-related issues.**

These policy issues include:

- **Performance-based funding**: At least 36 states have some form of performance-based funding. This ties some funding to measures of performance such as access, completion, transfer, or remediation. This is primarily for public institutions, but affects private institutions as well.
- **Emphasis on transfers**. Both community colleges and four-year institutions are seeing increased emphasis on being able to transfer credits earned at one institution to be able to graduate from another. (Some institutions are overwhelmed with the requests they are receiving to transfer credit.)

> *"The whole issue of transfer is one of the more important public policy issues right now. It's driving institutional behaviors."*
> — Don Hossler

- **Graduation**. In many ways, graduation (which has been closely measured by *U.S. News & World Report*) is seen as a de facto measure of institutional quality. The desire to increase graduation rates and the total number of graduates, as well as those with post-secondary certificates, is shaping federal and state policies and affecting institutions.
- **International standards**. The American National Standards Institute (ANSI) is part of a group that establishes international standards for various kinds of tertiary education certificates. Over the next decade this standards organization is likely to have a greater presence and play a greater role in affecting the offerings of community colleges and other certificate-granting entities.
- **Student debt loads**. There is a fair amount of debate right now whether student debt loads are a serious concern. One benchmark suggests that as long as a person's student debt is not greater than their first-year salary, they will be okay. In my own state for example, Indiana, the average student debt in 2012 was $27,000, which for most graduates should not be a problem. This perspective suggests that student debt may not be as significant of a problem as it is often made out to be.

  On the other hand, data shows that recent college graduates, up to age 34, are much less likely to buy a home or car than previous generations. This may be in part due to student debt. (These are examples of the type of data provided by institutions that makes these analyses and our understanding of student debt possible.)

- **Data and technology are affecting "practice" at institutions.**

Areas in which institutions are using data and technology in day-to-day practice include:

- **Enrollment**. Most institutions have developed or hire consultants to provide a robust capacity in analyzing enrollment data. This has become a necessity.
- **Financial aid**. Institutions now commonly have real-time access to a wealth of financial aid data.
- **Monitoring at-risk students**. Many institutions are purchasing or developing their own CRM tools. They are using these tools to identify who is at risk of not graduating and are then proactively intervening—viewed by some as "intrusive advising."

In fact, registrars' offices, admissions' offices, financial aid offices, and bursars' offices all interact with SIS systems, and mine and use data in making all types of decisions. Institutions increasingly operate in a "culture of evidence" where they rely on timely data to make good decisions.

> *"Institutions are supposed to be operating in a culture of evidence, meaning that they're supposed to have good, timely data to help them make decisions."*
> — Don Hossler

Effecting Sensible Change in Transfer and Articulation at the State Level—in a Hurry!

Speaker: **Jan Ignash**, *Vice Chancellor & Chief Academic Officer, State University System of Florida Board of Governors*

Overview

As institutions of higher education make decisions regarding transfer policies, they do so in a contextual environment that has never been more complicated, with more scrutiny and pressures from external stakeholders. Often stakeholders, including lawmakers, need information about the realities that govern higher education, including how metrics they care about affect one another. Unfortunate unintended consequences may result.

Amid such complexities, how institutions report data to stakeholders and what metrics they report matter greatly. The goal is to impart a more nuanced picture of what is really going on. And when institutions must make tough choices, answers to two questions can cut through the confusion and create clarity: 1) Is the option being considered justifiable both economically and educationally? 2) Is it in students' best interests?

Context

Jan Ignash discussed the complexity of the environment in which institutions must make transfer-related decisions and offered advice on communicating with stakeholders and making better decisions.

Key Takeaways

- **Institutions face more transfer-related scrutiny and pressures than ever in a complicated environment.**

  The topic of transfer is big these days. When students' credits aren't transferable, they face more years in the higher education system, borrow greater sums, and are at greater risk of dropping out and defaulting on their loans. Transfer-related issues are on the radar of more external stakeholders, including the media and legislators, than ever before, and stakeholders have more information than ever. Institutions are expected to both ensure smooth transfers so students don't lose credits, and find solutions when that doesn't happen, before time and money are wasted. But that's often tricky, especially given the "churning and swirling" enrollment behavior for which transfer students are noted.

  > *"Compared to even a few years ago, stakeholders have more information—and less patience—when students' credits don't transfer."*
  > — Jan Ignash

  Moreover, the external environment in which institutions must make transfer-related decisions is more complicated than ever. That is particularly true for public universities. With university systems in most states fully built out, state policymakers are concerned with targeted strategic planning and are intensely focused on institutional accountability, productivity, efficiency, and aligning state needs with education purposes. Much of what is on their radar is closely intertwined with transfer issues.

  Factors making the contextual environment for institutions' transfer decisions ever more complicated include:

  - **Accountability**. Many of the accountability metrics by which institutions are judged are affected by transfer students' situations. These include graduation rates, time to degree, excess credit hours, student debt, and return on investment. Poor transferability of transfer students' credits can hurt all of these.
  - **Transparency**. States are pushing institutions to present data in more sophisticated ways (like dash-boards) to demonstrate performance to stakeholders. Some states are implementing performance-based funding. In Florida, funding for underperformers is held in escrow until they make progress on objectives.
  - **Short-term responses with long-term consequences**. Approximately half of state legislators had less than two years' experience in 2013. Many novice lawmakers are on a fast learning curve regarding the interrelated complexities of transfer issues and other educational objectives. The laws they pass may have unintended consequences. An example: in 2009, the Florida legislature established a surcharge for students taking excess credit hours (10% beyond those required for a degree). This could cause some students to accumulate more debt, and their financial struggles could cause them to take longer to finish college and possibly drop out. The result could run counter to the desired effect by increasing borrowing levels, time to graduation, and graduation rates. Potential legislation addressing MOOCs, competency-based credit or life-experience credit, or gaps between graduates' majors and demands of the workplace could hold similar unintended consequences.
  - **External oversight triggers**. Developments that are under increased scrutiny from lawmakers and regulators these days include program duplication; conflicts between neighboring institutions; institutional lobbying; barriers to student transfer; lack of coordination among institutions in transferring

programs; building, closing, or merging institutions; and changing institutional missions.

> *"I think I'm building the case here for the fact that today's transfer environment is pretty complicated."*
> — Jan Ignash

Amid this complicated contextual environment for transfer-related decisions, institutions still must grapple with the two perennial questions:

1. How to strike a balance between granting access and upholding educational standards?
2. How to eliminate inefficiencies in the system so that transfers are as seamless as possible?

- **In this complex environment, the way institutions report their data matters greatly.**

Legislators, the press, and other external stakeholders need to understand how interdependent the statistics they care about are and avoid looking at isolated statistics outside of their context. For instance, it's important to consider how a school's percentage of transfer students in its student body affects graduation rates or time to graduation.

> *"By year six, [the Florida system has] a 68% graduation rate. If you look at other states, you know this is not bad. However, how does that sound to external stakeholders? They're going to say, 'What happened to the other 32%?'"*
> — Jan Ignash

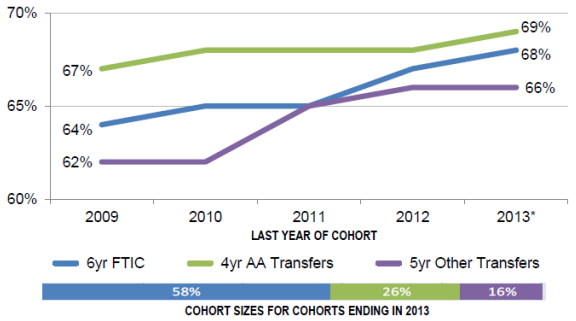
Which metrics institutions report and how they do so can make a big difference in how fully external stakeholders comprehend the interrelated forces in the world of higher education. Big data, visualization, and analytics have large roles to play in imparting more nuanced comprehension of what is really going on.

> *"Data is extraordinarily important, but it's hard with new leadership to get the attention and the time to be able to explain these very complicated higher-ed metrics we use to document our students' behavior."*
> — Jan Ignash

The board of governors at the State University System of Florida compiles an annual Accountability Report that tracks 40 metrics, designed to impart a more nuanced understanding of important realities. Data is broken into finer components than required; it is tracked over time; and relevant relationships are made salient via how data is juxtaposed. For example, graduation rates are plotted over time, for various student cohorts including different segments of transfers. Also, time to graduation is presented for each institution along with their percentages of transfer students.

Graduation Rates

System Graduation Rate by Student Type



> *""It's important to tell the whole story. We could just report time to degree, but I think it's important to add some sort of description of who these students are."*
> — Jan Ignash

- **When institutions face tough choices, answering two questions can cut through the noise.**

When faced with difficult decisions such as choosing between programs, issues, or policies that seem to conflict, solutions can be arrived at by analyzing all options in the context of answering two questions:

- *Is it economically and educationally justifiable?* The board of governors for Florida's university system must be able to defend all decisions both economically, showing the value-added gains, and educationally. A great new educational program won't fly if it's too expensive; every initiative has to have both educational and economic justification.
- *Is it in the best interests of students?* That is the bottom line, which helps cut through all of the noise in the complex contextual environment.

> *"If I stop and think what's in the best interest of students, the answers become clearer. They don't necessarily become easier, but they become clearer."*
> — Jan Ignash

Introduction to Load Testing Web Applications in the Cloud: Tools to Help You Simulate Student Traffic on Your Software and Systems

Speaker: **Robert Strazzarino**, *Founder/CEO, College Scheduler LLC*

Overview

Load testing is an effective way to determine the maximum operating capacity of college and university web applications. Creating temporary testing servers in the cloud is an inexpensive way for institutions to avoid impacting their existing IT infrastructure.

The best approach to testing is to develop a series of simple scenarios which can be captured using a script recording tool. Those scripts are essential for automating load testing, whether it is performed on local or cloud servers. Once tests have been vetted on local machines with a small number of users, IT teams should find application performance boundaries by simulating high traffic volumes on cloud-based servers.

Context

Robert Strazzarino discussed how to simulate web-based application traffic using the latest load testing tools in the cloud.

Key Takeaways

- **Load testing is an effective way for college and university IT teams to ensure their websites are robust.**

  Load testing is the process of putting demand on a system or device and measuring its response. It helps identify the maximum operating capacity of an application, as well as any bottlenecks. Load testing can also determine which element is causing degradation. There are four steps required for load testing:

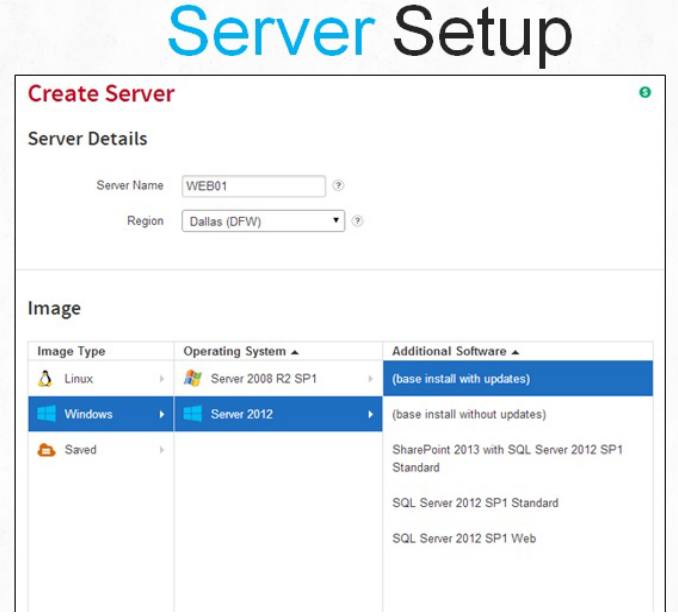
  1. *Server setup*. During this stage, servers are provisioned for testing. One option is to spin up load balanced servers in the cloud using a vendor like Rackspace or Amazon.com.
  2. *Simple scenario setup*. It is recommended to start load testing with a very simple scenario.
  3. *Code deployment*. In this phase, the code for the testing scenario is deployed to cloud servers.
  4. *Load testing*. During load testing, traffic from thousands of users is simulated using tools like Gatling and Flood.io.

  > *"Why conduct load tests? They will help you sleep at night!"*
  > — Robert Strazzarino

- **The cloud offers an easy and inexpensive way to set up servers for load testing.**

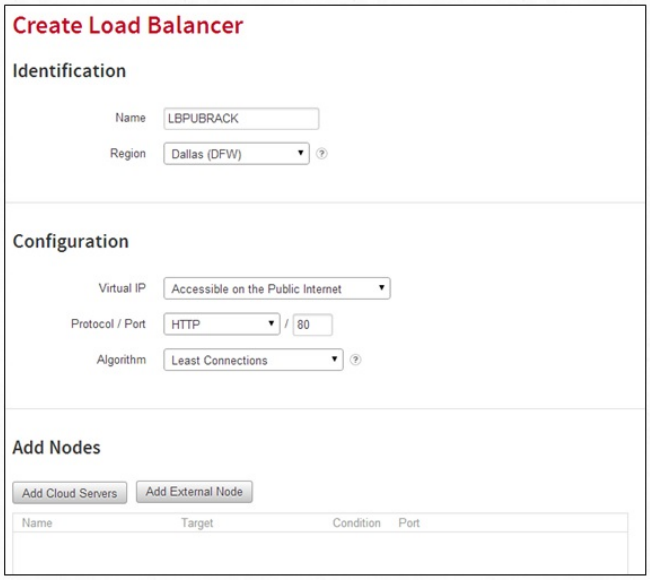
  Setting up servers in the cloud is a great way for institutions to avoid impacting their existing infrastructure. College Scheduler uses Rackspace, which is a publicly traded hosting company. Rackspace's Cloud Servers product allows users to create servers in a few minutes. The process has two steps:

  1. *Create servers*. Rackspace's user interface enables users to create Windows or Linux servers, and select which operating system and database software will run on each. Servers are rented by the hour. For example, an 8 GB performance server with 8 GB of RAM and solid state hard drives costs $0.40 an hour. This approach eliminates the cost of maintaining separate servers or paying for them monthly. In addition, it is possible to spin up servers, set up load tests, work for a few hours, and then spin them back down.



  2. *Create a load balancer*. Load balancers provide the flexibility needed to scale out to multiple servers. They distribute traffic among servers, which improves performance and provides system redundancy. When configuring load balancers, it is possible to select an HTTP or HTTPS connection, as well as the load balancing method. "Round robin" gives requests sequentially to different servers, while "least connections" sends requests to servers that are least busy. Nodes indicate which servers are located behind the load balancer.

Server Setup

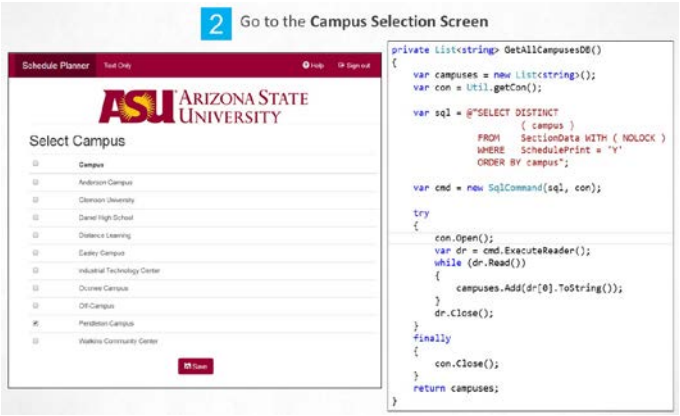


- **Simple test scenarios are a good place to start load testing.**

  Load testing should be based on a simple sample test scenario. Robert Strazzarino illustrated this load testing phase using the Arizona State University website. Three simple actions are captured in a load testing script.

  1. Sign the user in and issue a cookie.
  2. Go to the Campus Selection screen.
  3. Select campuses and click save.

  The script is then used to simulate thousands of users performing these operations. The goal is to try and break the system. The approach with load testing is to find the system's limits. If something breaks, it doesn't matter because the tests are run on inexpensive cloud servers.

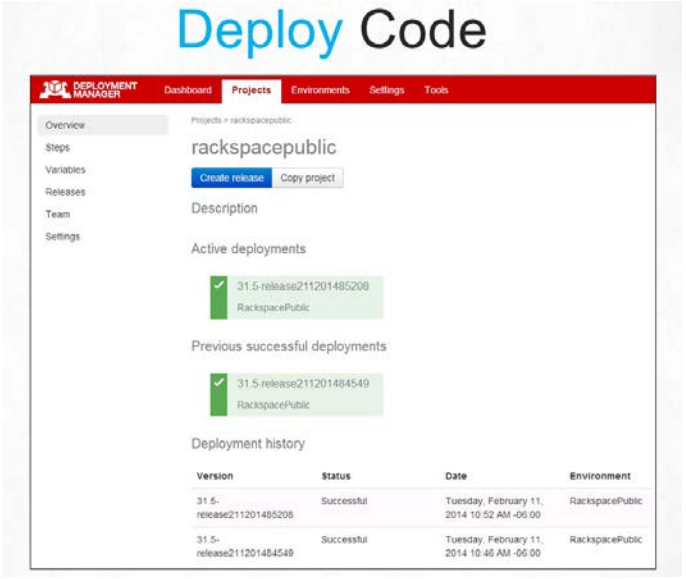


- **Code must be deployed to web servers simultaneously, while minimizing downtime.**

  The next step is to deploy code to the web servers where load testing will be performed. In a load balanced environment, the same code must be placed on every web server. It is possible to copy and paste files. A better solution, however, is a tool called Red Gate Deployment Manager which deploys code to a whole server farm with five seconds or less of application downtime.

  Red Gate Deployment Manager offers a connection to each web server and a means to send code to them. This type of tool helps IT teams stay organized. Bugs and errors emerge when different web servers behind the same load balancer run different code.

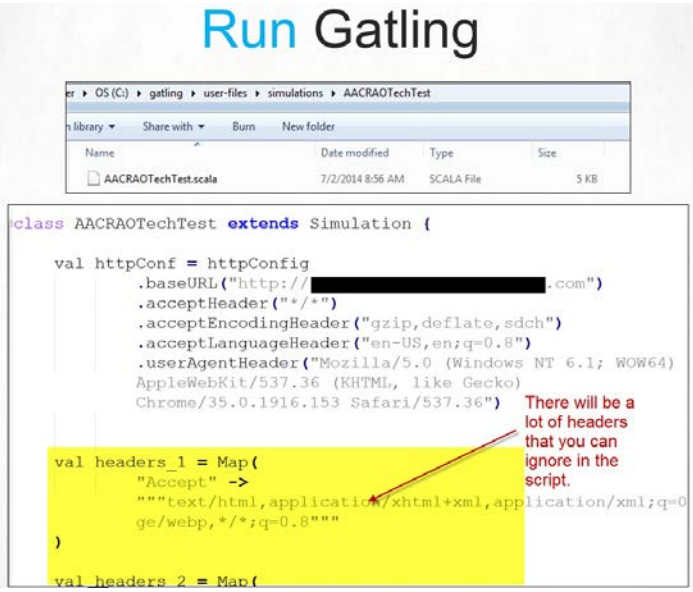
Deploy Code

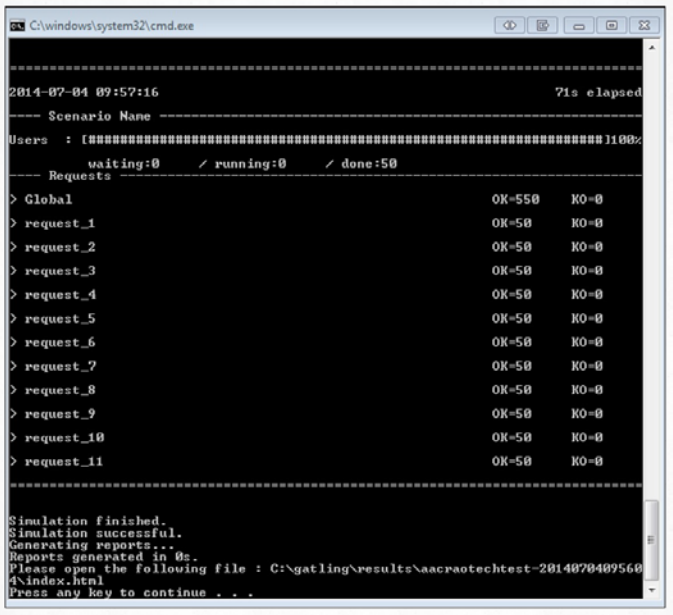


- **Load tests should be run locally first, then expanded to a cloud server architecture for large-scale, low-cost testing.**

  The load testing process has five steps:

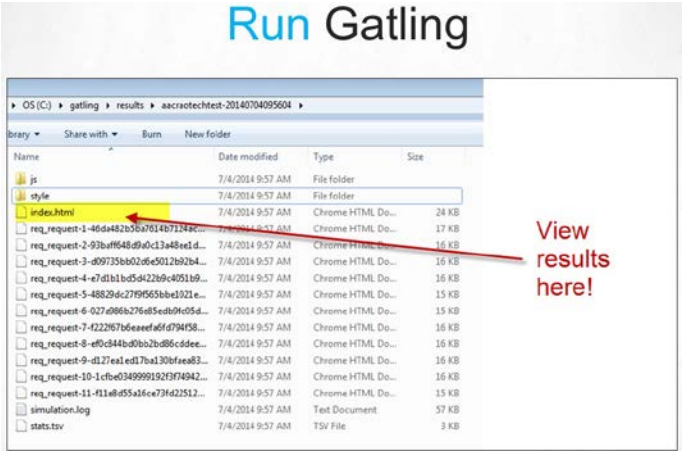
  1. *Use a web browser and a "recorder" to generate load testing scripts*. Recording tools alleviate the need to code scripts from scratch. College Scheduler uses a recorder called Gatling. The tool creates scripts when the user surfs in a web browser. When creating a script with Gatling, enter the script name and make note of the ports. The web browser must be configured to use a proxy for these, otherwise the recorder won't work. When Gatling is run, a script is created that reflects the user's activity in the browser.





2. *Break down common actions into separate scripts*. Mr. Strazzarino recommends breaking things down into very small operations, such as testing one screen at a time.
3. *Estimate ramp up and "think time" between actions*. With load testing scripts, it is possible to configure the same think times for all users or generate random think times. Using random think times initially is not recommended, since it adds another variable into performance results. In addition to think time, other script parameters that IT teams may want to edit include the time to ramp up to the configured number of users and the load test duration. It is important to ensure that the duration is long enough for tests to complete, including ramp up time.
4. *Run load tests on a local computer with a small number of users.* This ensures that everything is running perfectly. Mr. Strazzarino recommends starting with 50 users. Once the test has been vetted with a small number of users, it is helpful to create a feeder. This is a list of user names that will be included in the load tests. The feeder can be pasted into the load testing scripts. Gatling can be used to run tests on a local machine. In the Gatling runtime screen, look for requests with a KO greater than zero. That indicates that the request didn't complete.

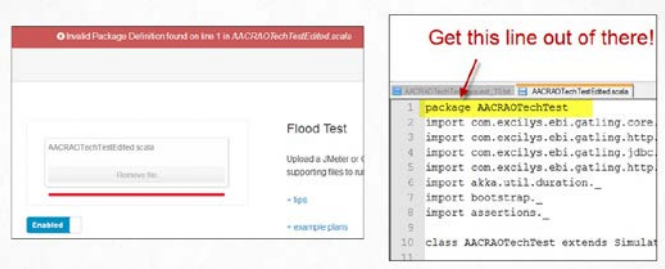
Gatling results can be viewed in a web browser by clicking on the index.html link. Pay particular attention to the mean and maximum response times for each request.



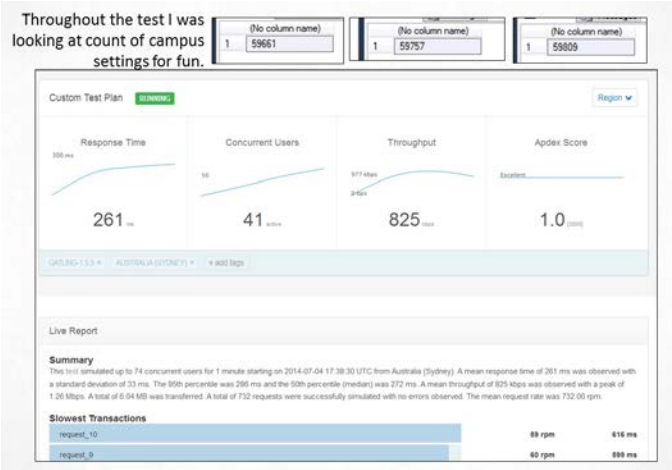
5. *Send load testing scripts to the cloud and run tests with more users than will ever be needed.* College Scheduler uses a service called Flood.io to upload Gatling scripts to servers in the cloud. Large numbers of users can be simulated cost effectively because servers are rented by the hour. It is possible in Flood.io to select which data center will be used to spin up servers. Grids represent the servers that run the scripts and floods are where scripts are uploaded and launched.

   Flood.io grids cost $5.00 per hour. When creating a grid, it is recommended to use the On Demand infrastructure option. The quantity of nodes or simulated users must also be configured, as well as the length of the test. With simple load tests, Mr. Strazzarino has found that Flood.io can handle 10,000 to 15,000 users per node.

   When scripts are initially uploaded to Flood.io, they will generate an invalid package definition error. The solution is to remove the custom package name line from the top of the file. In addition, the Flood.Package code has to be imported and httpConfig must be changed to httpConfigFlood.



   Once the scripts are uploaded and edited, it's time to run the Flood. This requires specifying the grid to be used, as well as the number of threads, ramp up, and duration. Values entered into those fields will overwrite the script. Mr. Strazzarino recommends putting information in the Notes field about code changes. As the test runs, the response time, concurrent users, throughput, and Apdex score fill in. Apdex is a standard for user satisfaction with website response times. The best Apdex score is 1.0. As response times increase, the Apdex score decreases.



   As numerous load tests are run with different parameters, it is useful to document the information in a spreadsheet.

> *"Load testing is fun and inexpensive. You can do this in a day, spend around $30, and have a nice quick win to show your colleagues who want to feel comfortable that your web applications can take the anticipated load."*
> — Robert Strazzarino

Other Important Points

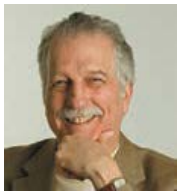
- **Flood.io's Australian node.** Nodes located in Flood.io's Australia region are free to use. This alleviates the $5.00 per grid charge.
- **New Relic.** Mr. Strazzarino uses New Relic as a server monitoring tool. It can listen to code during a load test and show lines of code that take the longest time to run.

Biographies

Thomas Black

Associate Vice Provost for Student Affairs and University Registrar, Stanford University

Thomas Black is the Associate Vice Provost for Student Affairs and University Registrar at Stanford University. He has worked in higher education for over thirty-five years in various administrative positions, serving in registrar positions at the University of Chicago, Duke University, and the University of North Carolina at Chapel Hill. He is an honorary member of the Southern Association of Collegiate Registrars and Admissions Officers and the Carolinas Association of Collegiate Registrars, and he frequently presents at the national conferences of the American Association of Collegiate Registrars and Admissions Officers. Tom is also a member of the National Student Clearinghouse Advisory Board. He has worked to perfect the electronic transcript and a safe means of delivering it via the Internet. He is interested in increasing the exchange of student data using standards while ensuring only authorized access to that information. Most recently, his interests have expanded to the development of electronic portfolios. Tom received his bachelor's and master's degrees from Penn State University.



Don Hossler

Director of the Center for Postsecondary Research & Professor of Educational Leadership and Policy Studies, Indiana University Bloomington

Don Hossler is director of the Center for Postsecondary Research at Indiana University Bloomington (IUB) and a professor of educational leadership and policy studies at IUB. Hossler has also served as vice chancellor for student enrollment services at IUB, associate vice president for enrollment services for the seven IU campuses, executive associate dean of the School of Education, and chair of the Department of Educational Leadership and Policy Studies. He was executive director of the National Student Clearinghouse Research Center from 2010 to 2012. He recently served as an expert on a panel organized by the National Center for Educational Statistics to provide the U.S. Department of Education information and perspective on the potential development of the Postsecondary Institution Ratings System.

Hossler's areas of specialization include college choice, student persistence, student financial aid policy, and enrollment management. He has presented more than 130 scholarly papers and invited lectures and is author, co-author, or editor of more than 20 books and reports as well as more than 80 articles and book chapters. He has served as editor of *Enrollment Management Review* and is founding editor of the *International Journal of Educational Advancement*. Hossler has directed projects focusing on student success and persistence funded by the College Board, the Bill & Melinda Gates Foundation, the Lilly Endowment, the Lumina Foundation for Education, and the Spencer Foundation. He has consulted with more than 50 colleges, universities, and educational organizations including the College Board, Educational Testing Services, the University of Cincinnati, the Inter-American University of Puerto Rico, the Pew Charitable Trusts, the University of Missouri, Colorado State University, the University of Alabama, the State of Maryland, and the U.S. Government Accountability Office.

He has lived in Russia and has conducted research in postsecondary education there and also in China. Hossler has received career achievement awards for his research, scholarship, and service from the American College Personnel Association, the Association for Institutional Research, the College Board, and the National Association of Student Personnel Administrators.

Jan Ignash

Vice Chancellor & Chief Academic Officer, State University System of Florida Board of Governors

Dr. Jan Ignash joined the Board in 2012 after having served most recently as deputy director and chief academic officer for the State of Washington Higher Education Coordinating Board. Serving a lead role in that state's strategic master plan update and accountability initiatives, Dr. Ignash has demonstrated an ability to collaboratively create and implement innovative policies and practices and an understanding of both funding issues and legislative processes.

Her experience spans three decades in education with increased responsibility at both state and campus levels. From 1994-99, Dr. Ignash worked at the Illinois Board of Higher Education. She has also taught at both undergraduate and graduate levels earning tenure at the University of South Florida. Dr. Ignash earned a Ph.D. in Education from UCLA, and master's and bachelor's degrees from Michigan State University.

Matthew Pittinsky
CEO, Parchment

Matthew Pittinsky brings to Parchment a unique background as both an education technology entrepreneur and a sociologist of education. In 1997 he co-founded Blackboard Inc., serving first as Chief Executive Officer and then Executive Chairman. Millions of students across the world use Blackboard technologies.

Matthew is on the faculty of Arizona State University, serves on the Board of Trustees of The Woodrow Wilson National Fellowship Foundation and is leading a national effort to establish a national, standardized Postsecondary Achievement Report (PAR), a digital "extended transcript" that would more fully record student achievement and knowledge during their higher education experience.

In 2012 the Teachers College at Columbia University awarded Matthew with The President's Medal of Excellence to recognize his impact and innovation in the field of education technology and entrepreneurship. He is a frequent speaker, and has recently been invited to present at NewSchools Summit, Association of American Universities meeting, National Association for College Admission Counseling National Conference, and SXSWedu.

Matthew holds a B.S. in Political Science from American University, Ed.M. in Education Policy from Harvard University Graduate School of Education, and a Ph.D. in Sociology of Education from Teachers College, Columbia University.

Michael Reilly
Executive Director, AACRAO

Mike Reilly joined AACRAO as Executive Director on June 1, 2012. Prior to coming to AACRAO he served as the Executive Director for the Council of Presidents, an association of the six public baccalaureate degree granting institutions in Washington state. He has 20 years of experience in university admissions and enrollment management, including having served as the Associate Vice President for Enrollment Management at both Central Washington University and Humboldt State University.

Sandy Shugart
President, Valencia College

Since 2000, Dr. Sanford "Sandy" Shugart has served as the fourth president of Valencia College in greater Orlando, Florida. As winner of the first Aspen Prize for Excellence, Valencia is one of the most celebrated community colleges in America. Serving some 70,000 students per year, Valencia is known for high rates of graduation, transfer, and job placement and has become something of a national laboratory for best practices in learning-centered education.

Prior to Valencia, Sandy served as president of North Harris College and as Vice President and Chief Academic Officer of the North Carolina Community College System. He earned his Ph.D. in Teaching and Learning from the University of North Carolina at Chapel Hill. In addition to his career in education, Dr. Shugart is a published poet and songwriter and author of *Leadership in the Crucible of Work: Discovering the Interior Life of an Authentic Leader*.

Robert Strazzarino
Founder/CEO, College Scheduler

Robert Strazzarino is the founder and CEO of College Scheduler LLC. College Scheduler provides a web-based schedule planner to students at higher education institutions around the United States and Canada. Robert started his first company while in high school. Previously, he worked for Chevron Corporation and also interned with the FBI in Washington, D.C. In addition to running College Scheduler, Robert is an active angel investor. His investments include Bizness Apps, a mobile app platform that powers over 5 percent of the entire Apple App Store and is used in over 20 countries. Robert frequently speaks at California State University, Chico, on entrepreneurship, business, marketing, and computer science classes.